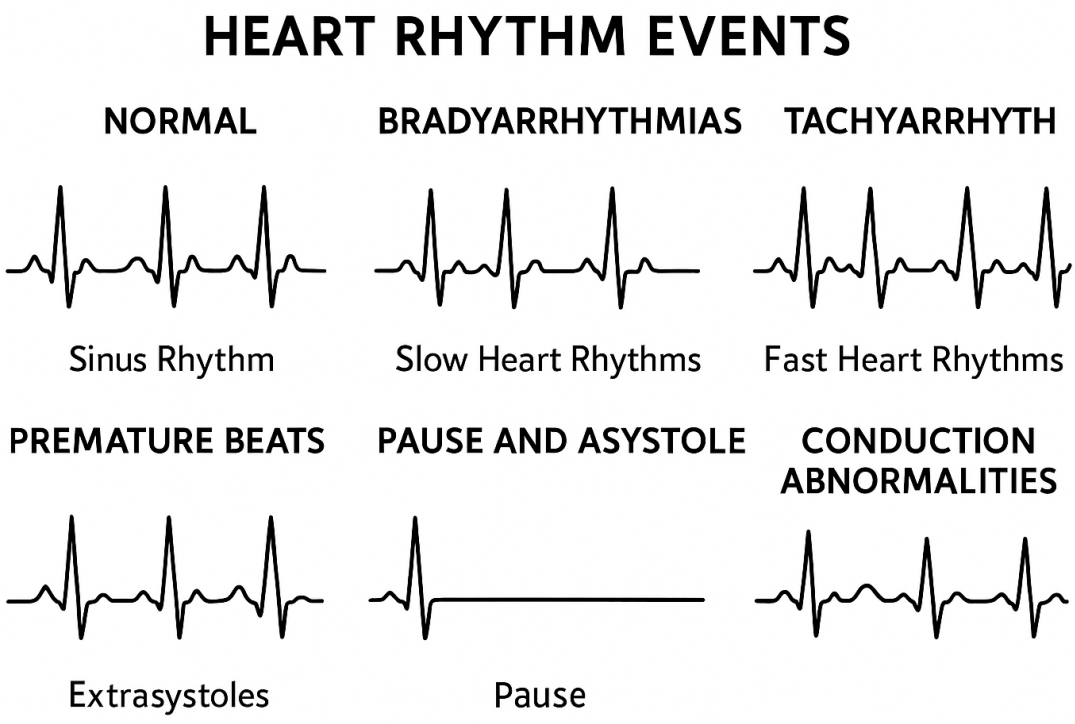
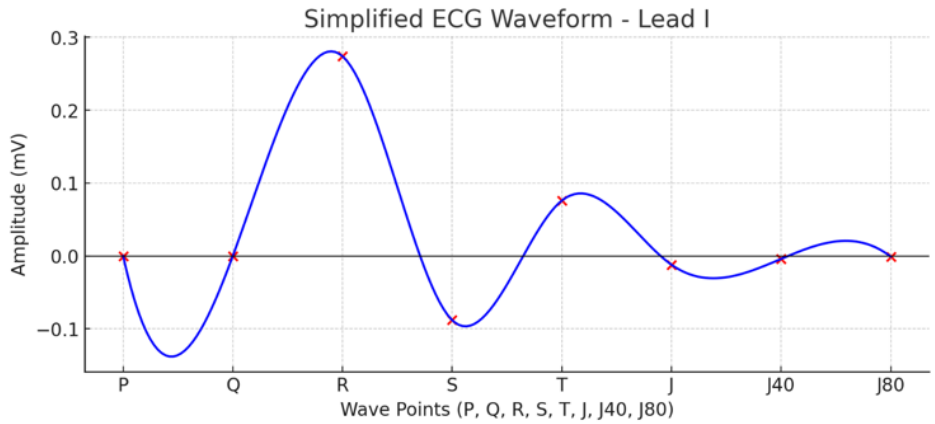
Vitals 4 Pets

Animal ECG Pocket Guide

Parameter	What It Shows	Normal Range	Problems If Abnormal
PR Interval	Signal from atria → ventricles	Dog 60–130 ms Cat 50–90 ms Horse 130–200 ms	Too long → AV block Too short → Pre-excitation
QRS Duration	Ventricular contraction time	Dog 40–60 ms (up to 80) Cat 40–60 ms Horse 80–120 ms	Too long → Bundle branch block Weird shape → Ventricular enlargement/arrhythmia
QRS Axis	Direction of ventricular signal	Dog +40°–+100° Cat 0°–+160° Horse – not useful	Shifted axis → Chamber enlargement/conduction problem
QT Interval	Ventricles contracting & resetting	Dog 150–250 ms Cat 120–180 ms Horse 300–450 ms	Too long → Risk of dangerous rhythm Too short → Fast HR or high calcium
Heart Rate	Beats per minute	Dog 60–160 Cat 140–220 Horse ↓ 44	Too fast/slow → Tachycardia/bradycardia



Example Amplitude



Here's a smooth ECG-like waveform for **Lead I** based on your amplitude data.

- The **red dots** show the actual measured points.
- The **blue curve** is a smoothed line connecting them to resemble a real ECG trace.
- You can clearly see the prominent **R wave**, the small **S dip**, and the **T wave**. The **J point and post-J amplitudes** are nearly flat, just as your data indicated.

Purpose of Minnesota ECG Codes.

- Standardizes the reporting of ECG abnormalities.
- Enables comparison of ECG data across studies.
- Commonly used in epidemiologic studies like the **Framingham Heart Study** and **ARIC (Atherosclerosis Risk in Communities)**.
- Helps quantify cardiovascular risk based on ECG findings.

The Minnesota Code classifies ECGs into major categories with subcodes:

1. **Q and QS patterns (codes 1-1, 1-2, 1-3, etc.)**
    - Related to myocardial infarction or significant Q waves.
    - Examples:
        - **1-1**: Q or QS wave ≥0.03 s duration, amplitude ≥0.1 mV.
        - **1-2**: Q waves of lesser magnitude or in other leads.
2. **ST Segment and T Wave changes (codes 4-1, 4-2, 5-1, 5-2, etc.)**
    - Indicate ischemia, strain, or other repolarization abnormalities.
    - Examples:
        - **4-1**: ST segment depression ≥0.5 mm.
        - **5-1**: T wave inversion ≥1 mm in leads I, II, V3–V6.
3. **Arrhythmias (codes 8-1, 8-3, 8-4, etc.)**
    - Atrial and ventricular conduction abnormalities.
    - Example:
        - **8-1**: Atrial fibrillation or flutter.
        - **8-4**: Ventricular premature beats.
4. **Other codes**
    - **Bundle branch blocks** (code 7 series)
    - **Axis deviations** (code 2 series)
    - **Miscellaneous conduction disturbances**